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selves with all previous literature on the same subjects; but notwithstanding the elaborate bibliographies now so commonly appended to papers on special topics, the crediting and utilization of the more remote publications seems in danger of falling into innocuous desuetude.

E. W. HILGARD.

UNIVERSITY OF CALIFORNIA,
December, 1906.

CURRENT NOTES ON METEOROLOGY.

BLUE HILL OBSERVATORY.

VOL. LVIII., Part II., of the *Annals of the Harvard College Observatory* contains 'Observations and Investigations made at the Blue Hill Meteorological Observatory in the Years 1903 and 1904.' From the introduction we learn that Mr. H. H. Clayton, well known as one of the foremost meteorological investigators in the world, has completed twenty years of service at Blue Hill, and that Mr. S. P. Fergusson, who, by his skill as a mechanic and his general ability along many lines of meteorological inquiry has contributed largely to the success of the Blue Hill work, has completed eighteen years of service. The introduction also contains a review of the principal work done at Blue Hill in the twenty years since its opening, but as readers of SCIENCE are familiar with much of this, we do not summarize here. Mr. A. Lawrence Rotch, the founder of the observatory, without whose untiring devotion to his science and unfailing readiness to assume the increasing financial burden of maintaining this institution the United States would occupy a far less prominent place in meteorological advancement, may well look back on the past twenty years of work at Blue Hill with pride and satisfaction. American men of science can have but one hope and wish in connection with the Blue Hill Observatory: that its next twenty years may be as fruitful in results as the last twenty have been.

THUNDER-STORMS AND THE MOON.

MUCH time has been spent by various investigators in the attempt to show some relation between the occurrence of thunder-storms and the phases of the moon. The latest con-

tribution to this discussion comes from C. W. Hissink, of Zutphen, who in the September number of 'Hemel en Dampkring' presents the results of a study of thunderstorm days in Holland for the period 1883-1903. The means for these years show so complete an agreement for different phases of the moon that there can be no question that no lunar influence is shown. Evidently the supposed connection between moon and thunder-storms depends for the results obtained upon the period which any investigator uses, and upon the length of the series of observations. When a long series of observations is available, no lunar influence is, on the whole, manifest.

LANTERN SLIDES ILLUSTRATING CLIMATE.

WE note the publication, by the Diagram Company, of New Malden, Surrey, England, of the seventh issue of 'The Diagram Series,' designed by B. B. Dickinson, assistant master at Rugby, and A. W. Andrews, extension lecturer. This series comprises a considerable number of lantern slides illustrating the climate of the world as a whole, and of the separate continents. Among these we observe charts of isotherms, isobars, winds, ocean currents and rainfall. It is encouraging to see the rapid increase in the demand for such teaching materials in meteorology and climatology for use in colleges and schools.

R. DEC. WARD.

NOTES ON ENTOMOLOGY.

A MOST interesting and attractive paper is that of Arnold Pictet,¹ on the influence of food and humidity on Lepidoptera. A great number of experiments were made by the author on the larvæ of twenty-one different species of Lepidoptera, among them the gipsy and brown-tail moths. His results show that changing the usual food is apt to cause variation in adults. A food difficult of assimilation hinders the growth of the caterpillar and lengthens larval life; in consequence the pupal

¹ 'Influence de l'alimentation et de l'humidité sur la variation des papillons,' *Mém. Soc. Physique et d'Hist. Nat. de Geneve*, Vol. 35, pp. 45-127, 4 pl., 1905.

period is shorter and there is a scarcity of pigment at emergence, resulting in a more or less albinic specimen. Insufficiency of the normal food will produce the same result. On the contrary, abundant and rich food shortens larval life, lengthening the pupal period, so that there is an abundance of pigment, and a highly colored or melanic specimen appears at emergence. Color varieties of larvæ are often associated, but not always, with color varieties of the adults. Some caterpillars feeding on the same food may be either brown or green. The development of secondary sexual characters is also influenced by the kind and abundance of food. He finds that the size of the adult is proportioned to the size of the caterpillar; and that males vary more than females. Varieties produced by feeding increase in intensity and distinctness at each generation on the same food; however, there is always some tendency to revert to the normal form. Humidity in larval life is a partial factor in melanism, but much depends upon the temperature of the humidity and the time of its application. In some cases of cold humidity paler and more spotted forms were produced in a rather dark butterfly. The variation from humidity appears mostly on the front wings, and melanism usually starts along veins. Four fine plates illustrate the results of his experiments.

Dr. O. M. Reuter has presented an important work on the classification of the Hemipterous family Capsidæ.² The author, who has spent much of his life studying this one family, gives a long historical, critical and constructive account of the classification of these plant-bugs. He devotes considerable attention to a criticism of Mr. Distant's work on this family. After an examination of the structures most useful for genera and higher groups, he divides the family into twenty 'divisions,' or tribes, an elaboration of his previous classification, in the 'Hemiptera Gymnocerata Europæa.' He finds the best characters for the divisions in the pronotal carina, the cell of the wing-membrane, the tarsal joints, and especially in the arolia of

the claws. Genera are based largely on shape of the head and the antennæ. Following this there is a phylogeny of the family, and a 'tree' to illustrate his views.

Dr. Walter Rothschild and Karl Jordan have published a revision of the American swallow-tail butterflies.³ It is based on the collections in the Tring Museum and that of Oberthür. Full references and synonymy are given for all species and varieties. There are descriptions of some new species and many new subspecies, mostly from South America and the West Indies. Three new names are given to forms from the United States: *P. thoas* subsp. *autocles* from Texas; *P. glaucus* subsp. *canadensis* from Canada and Newfoundland; and *P. marcellus* subsp. *lecontei*, from various parts of the United States, to replace the *P. ajax marcellus* of Edwards, the true *marcellus* applying to the *P. ajax walshi* of Edwards.

The second report of the Wellcome Research Laboratories at the Gordon Memorial College, Khartoum, Egypt, 1906, contains a number of interesting papers. Theobald makes an additional report on the mosquitoes of the Sudan. He gives also notes on the 'maggot fly' (*Benigalia depressa*), the larvæ of which live under the skin of man, and other animals; also notes on the 'Congo-floor-maggot' (*Auchmeromyia luteola*), the larvæ of which crawl at night from crevices in the floor to suck blood from sleeping persons. He also gives notes on some stingless bees, a new pupiparous fly from the ibex, some Sudanese Hippoboscidæ, a melon fruit-fly (*Dacus* sp.), and on the Dura plant-bug (*Lygæus militaris*). Mr. E. E. Austen treats of several blood-sucking Diptera, describes two new species of Tabanidæ, and gives notes on various other species.

A little-known phase of entomology is touched by K. Leinemann in his article on the number of facets in the eyes of insects.⁴ He

² 'A revision of the American Papilios,' *Novitates Zool.*, XIII., pp. 431-752, 6 plates, 1906.

³ 'Über die Zahl der Facetten in den zusammengesetzten Augen der Coleopteren,' Dissertation, Münster, 1905, pp. 64.

⁴ 'Die Klassifikation der Capsiden,' *Festschrift für Palmén*, No. 1, Helsingfors, 1906.

has had the patience to count the facets in the eyes of 150 species of beetles. He finds that the larger the specimen, the more numerous are the facets, and that usually there is not much difference in the sexes. The male in many cases, however, has more facets than the female. In *Lampyrus splendidula* the male has 2,500 facets, while the female has but 300. *Melolontha vulgaris* has, male, 5,300, female, 4,850; and *Saperda carcharias*, male, 2,200, female, 1,800. There is no general reduction in nocturnal species.

South American termites are the subject of an exhaustive paper by Dr. N. Holmgren.⁵ It is based on collections made in parts of Peru and Bolivia. Out of the thirty-nine species taken, twenty-six are described as new. He adopts the genera of Wasmann. Nearly one half of the article treats of the ethology and postembryonal development; the latter subject being almost entirely new. There are chapters on swarming, the founding of colonies, the enlargement of the nest, the use of the soldier, symbiosis of different species, classification by the nesting habits, and the geographical distribution of all the species known from South America.

Dr. K. Escherich describes some interesting new genera of exotic Thysanura,⁶ the most remarkable being *Assmuthia*, with two new species from India. This genus bears much general resemblance to some Collembola, with nearly equal segments, a strongly convex body, and very short anal stylets. It occurs in ants' nests.

A. Dücke publishes a supplement to his former article on the habits of Brazilian social wasps.⁷ The nests of nearly ninety species are now known to him. He gives a key to the genera of South American Vespidae, and a

⁵ 'Studien über südamerikanische Termiten,' *Zool. Jahrb., Abt. Syst.*, XXIII., pp. 521-676, 60 figs., 1906.

⁶ 'Beiträge zur Kenntnis der Thysanuren,' *Zool. Anzeiger*, XXX., pp. 737-749, 1906.

⁷ 'Sobre as Vespidas sociaes do Para—Supplemento,' *Bol. do Museu Goeldi*, IV., No. 4, 1906, pp. 652-698.

classification by nests and habits. Photographs of nests are on four double plates.

NATHAN BANKS.

BOTANICAL NOTES.

'PROGRESS OF BOTANY.'

UNDER this alternative English title Doctor J. P. Lotsy, of Leiden, has begun the publication of an annual summary of the recent advances in botany to be known under its Latin title as 'Progressus Rei Botanicae' (Gustav Fischer, Jena, 18 mk.). Only the first Heft of 317 pages has come to hand, but the prospectus promises the completion of the first volume during the present winter. Hereafter it is the intention of the editor to publish the *Heften* at intervals of about four months, the three *Heften* making an annual volume of from six to eight hundred pages. The part before us contains four articles, viz.: 'Die Ontogenie der Zelle seit 1875,' by Professor Eduard Strasburger; 'The Present Position of Palaeozoic Botany,' by Doctor D. H. Scott; 'Bibliography of Literature on Palaeozoic Fossil Plants,' by E. A. Newell Arber, and 'Les progrès de la Géographie botanique depuis 1884,' by Professor Ch. Flahault. The treatment is considerably different in these papers. The first, by Strasburger, is an admirable summary of the steps by which our present knowledge of the process of cell division, and especially of karyokinesis, has been built up by additions made by many investigators. Dr. Scott's paper is an attempt to give a sketch of our present knowledge of paleozoic plants, and his treatment is somewhat more general than the preceding one. In Professor Flahault's paper the treatment is still more general, and is much more like a somewhat popular lecture on the subject to a company of botanists who were not specialists in phytogeography. It is an admirable introduction to the present development of this branch of Botany as understood by the author of the paper. The bibliographical paper by Mr. Arber is thoroughly classified, and must prove of great service to paleobotanists.

A full review of this promising publication, which must be indispensable to every botanist,